

**Sustainable Financing for Environmental Projects in Africa:
Some Ideas for Consideration**

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1. Introduction

In Africa, more than anywhere else on Earth, the well being of people strongly depends on natural resources.

It is therefore essential that natural resources are much better protected and managed. Unfortunately, this is not the case these days and a new approach to nature conservation and the sustainable use of natural resource shall therefore be sought. The traditional “project approach” does not work anymore.

The major reasons for the failure of the old way to do things are threefold:

- 1) They are based on projects and when the project ends, very often the programme or the activities die with it;
- 2) They are too dependent on “donor” funding and when the “donor” is not interested anymore, the programme ends, and
- 3) Environment and development continue to be seen as two different issues.

The situation is worsened by the extremely centralised and bureaucratic way in which bilateral and multilateral development funds are functioning. It can take up to five years of expensive and intensive paperwork to have an EU project or a GEF project approved!

New, locally driven and financed ways of doing things are needed. This paper will review 4 of the most promising conservation finance mechanisms that could be useful to Africa. Some already exist in the region, some not. Of course, all of them shall be adapted to local realities. A very promising South-South cooperation could be established with Latin America (who pioneered most of these mechanisms) as well as Asia.

UNEP has developed a large portfolio of about 20 conservation finance projects all over the world and is actively promoting this South-South collaboration. For example, members of the Latin American Network of Environmental Funds (UNEP/GEF) project will soon be visiting and supporting their colleagues of the Serengeti Trust Fund Project under negotiation (UNEP/GEF).

UNEP/GEF is also promoting exchanges of experiences between colleagues from Uganda, Kenya, Thailand and the Philippines to look at how to best promote biodiversity conservation with social Equity through pro-poor Conservation Financing (another UNEP/GEF project with CARE)

WWF Colleagues from the Danube Delta Payment for Ecosystem Services (UNEP/GEF) project will support their Massai colleagues from the Amboseli forthcoming (UNEP/GEF) payment for ecosystem services project.

2. Environmental Funds

Environmental Funds (EF)¹ are not new and the idea dates back to the early 1990s.

It is therefore important to draw lessons from it. Their importance and number have been on the increase ever since but there is still some reluctance on the part of bilateral donor agencies to support the capitalisation of EFs. Today, there are about forty six operating Funds, mostly in Latin America. There are fewer EFs in Africa, Asia and the

¹ Perhaps the wording “Environmental Fund” is not the most desirable as it might give the wrong impression that these kinds of funds perpetuate the existing dichotomy between environment and development activities. The reality of existing funds has shown that this is far from being the reality but Sustainable Development Funds might be a more appropriate wording.

Commonwealth of Independent States, but their numbers in these regions are also increasing. Globally, about 56 new Funds are either being created or under negotiation.

Since their inception, EFs have attracted considerable expectations and interest from environmentalists. They are seen and often used as much more than mere financial mechanisms. On the financial side, they are promoted as long-term sources of finance for conservation and sustainable development tools. One of the main arguments used is that they are very good instruments to finance protected areas' recurrent costs. In other words, costs like permanent monitoring, park guards, infrastructure maintenance and any other regular cost that can be planned well ahead could be financed through EFs. At the same time, they are often used to strengthen environmental organisations and promote a participatory approach to environmental management (see below Fund structures). Another argument put forward is that they are a perfect tool to balance the often very limited "financial absorption capacity" in many developing countries.

The GEF is supporting environmental funds for Protected Area systems. Discussions are underway to have the GEF accepting to support Environmental Funds (EFs) outside Protected Areas, in production landscape, for example in connection with payment for ecosystem services projects.

Of course, the counter-argument is that huge amounts of money only render small amounts of cash. Some critics also add to this that EFs require strong institutional capacities and bear a high administrative cost. As we will see below, these arguments are not entirely true and solutions can be found. The fact that the existing global financial mechanisms are administratively cheaper remains to be proved. On the other side, one could bear with a higher administrative cost if it leads to a much more efficient implementation of multilateral environment agreements. Furthermore, capacity building in conservation finance or financial management of conservation assets is an important and often undervalued part of the art of environmental management.

Funds for EFs come from various sources but the most important ones are the Global Environment Facility (GEF), bilateral donor organisations through debt counterpart funds, and development cooperation funds. One also predicts a potential increase in funds from the UNFCCC and its Kyoto Protocol signed in December 1997. The Protocol calls for further exploration of financial mechanisms, including carbon sequestration fees and the Clean Development Mechanism (CDM). This mechanism is still somewhat controversial and particular attention should be paid to make sure the mechanism does not become a loophole for rich carbon emitters through which developed countries could obtain "carbon credits" for their activities in developing countries.

Once they are operational, many Funds manage to raise additional funds from various sources or gain additional capital from good portfolio management. Environmental Funds should not rely solely on Official Development Assistance funding but also, and maybe increasingly, on local funding sources like environmental fees, royalties, and fines, and on any other so-called Market Based Instruments (MBI).

For example, a newly created Fund in Ecuador, with the support of The Nature Conservancy, will be capitalised by fees charged for the use of water in the city of Quito. The Fund, in turn, will provide money needed to protect the forests in the city's watershed.

What are Trust Funds?

There is no rigid definition for Trust Funds. Their structure, scope of activities and procedures vary according to the purpose for which they were created. Not all Funds are serving environmental goals -- UNICEF has created many Funds for children's protection. UNESCO has supported Education Funds. Some Funds are specifically designed to support micro-enterprises. But one has to recognise that the majority of the existing Funds are directed at conserving the environment and promote sustainable development. They are generally of three types:

- National Environment Funds (NEFs) which are often very big and serve a full range of activities. Some of them became real institutions. The Bolivian CONAMA is one of them. The Buthan Trust Fund for Environmental Conservation is another.
- Some are theme- or site-specific Funds and aim at protecting a specific animal species or a specific ecosystem.

- Many of them are Funds that make grants to others. The Brazilian Biodiversity Fund (FUNBIO) is one of these, as is the Foundation for the Philippine Environment. These Funds often have a strong civil society institutional strengthening component.

Funds can take at least three fundamentally distinct forms: Cash Fund, Endowment Fund, and Revolving Fund.

Cash Fund or Sinking Fund: This form is the simplest one. The Cash Fund receives money from donors, fines, royalties or any other source, either in one installment or in several tranches, and spends it according to the availability of money and approval of projects. All spending is done on a grant basis. Project monitoring can be carried out by the Fund administration. When Funds are exhausted, either the Fund is replenished or, if it was designed as a Sinking Fund, it ends its operations. This is often the case with debt counterpart Funds.

Endowment Fund: The Endowment Funds invest the Funds received in an interest-bearing form such as bonds, private bank accounts, real estate, etc. and spend only interest earned on those investments. This form trades cash availability, which of course is considerably smaller than in the case of the Cash Fund, against the establishment of a long-term financial investment for environmental conservation.. Moreover, the establishment of administrative bodies is also a more long-term affair. However, this kind of Fund requires a minimal financial critical mass to be worth while. If the capital invested is too small, the interest earned will be insignificant and not worth the trouble.

Revolving Funds: The Revolving Fund disburses the cash in the same way as the Cash Fund but it does so on a loan basis. A long-term financial mechanism is therefore established in the same way as the Endowment Fund. Here again, there is a trade-off, this time between investment security and immediate outreach to target groups. Assuming that loans made in the context of the Fund's environmental aims are not as secure an investment as government bonds or real estate, the Funds trade greater availability of cash for its projects against a higher degree of insecurity.

What kind of Fund is best?

None of these alternatives is better or superior to the other (Mikitin, 1995). Each one fits a particular situation which should be carefully analysed. Among these deciding factors, one can note the following: the immediate financial absorption capacity of the NGOs, government agencies, and communities; the amount of funds available; the experience NGOs or state agencies have with Revolving Funds; the relationship between the NGO community and the government; the situation of the local financial market, etc.

The Bhutan Trust Fund for Environmental Conservation is the first such Fund established in 1992 as a follow-up to the Rio Conference. It is exemplary in that it is a collaborative venture between the Royal Government of Bhutan, the United Nations Development Programme (UNDP), the World Wildlife Fund (WWF), the Global Environment Facility (GEF) and the cooperation agencies of Denmark, Finland, The Netherlands, Norway and Switzerland.

After a few years of careful financial management, the capital of the Fund rose from an initial US\$ 10 million to approximately US\$ 28 million today. Administrative costs are approximately 10% of investment revenues. Investment of assets has been contracted out to an overseas private investment manager and net income is more than 8% annually. The success of the Fund capitalisation is due to the strong government commitment to protect Bhutan's forests and biodiversity.

Grant funding in early years was severely limited by the lack of local capacity in project preparation and implementation. After a few years of concentration on capacity building activities, the Fund has developed grant-making guidelines and procedures and is now supporting a series of projects annually.

The Fund has become a fully independent grant-making organisation financing projects which (1) support conservation initiatives in the entire green sector, including sustainable utilization of genetic and species resources; (2) strengthen integrated conservation and development planning through applied conservation research and monitoring of biodiversity change; (3) promote education and awareness of conservation policies and issues.

The Mgahinga and Bwindi Impenetrable Forest Conservation Trust² is another very good example of the usefulness of this kind of mechanism, both in terms of participatory and community management of natural resources and of the creative and very positive role the “donor community” can play in fostering this approach.

The Bwindi forest is the most important biodiversity hotspot in Uganda and contains half of the world’s mountain gorilla (*Gorilla gorilla beringei*). It is surrounded by densely populated agricultural land. Violence is endemic in the area.

Most nearby communal swampland was converted to farmland by few rich farmers, depriving poor people of access to once-communal land used for grazing and collection of natural commodities. Swamp clearance led to climatic changes.

Logging and hunting in the forest dramatically increased, as did gold mining. In good faith, and so as to avoid further destruction, the Government of Uganda established a national park in 1991. No consultations were held and little attention was paid to local needs. As a result, local resentment rose, forest fires were set and threats made against the gorillas.

Under pressure, local authorities finally agreed to discuss the problem with villagers and communities, supported by the NGO, CARE International. A consultation process started which led to the creation of a Trust Fund.

The objective of the Fund is to protect prime mountain gorilla habitats by funding park protection, research and community conservation activities in a priority conservation area. The estimated capital needs for an endowment were US\$ 10 million. An initial GEF-funded endowment of US\$ 4.3 million in 1994 was granted as the basis of the Trust endowment but, because they were sceptical or for reasons of legal restrictions, no donors actually added funds to this endowment.

A USAID 900.000 US\$ grant in 1994 and a further DGIS US\$ 2.7 million in 1997, given on a sinking fund basis, covered all administrative and project costs for a period of 7 years, allowing the Trust to reinvest 100% of its interest income into the initial endowment. It is estimated that by the end of 2002, the Trust will have amassed an endowment of about US\$ 8 million, close to its original target of 10 million.

With these long-term secured resources, the Bwindi Trust Fund created a grant programme with the long-term aim of protecting two national parks: the Bwindi and the Mgahinga. To achieve this goal, the Trust Deed³ establishing the Trust Fund apportioned grant resources according to the following priorities:

- 20% for research
- 20% for local park authorities to defray management and recurrent park costs
- 60% for community projects promoting conservation and sustainable development activities

Not only did the Trust Deed allocate the majority of funds for community development activities, but it also strongly involved the community in its management by establishing community representation within both the governance structure and the organisation’s programme management regime. Three of the nine members of the Board of Directors are community members from the area of operation of the Trust, elected by their peers. They participate in all governance issues related to the management of the Trust.

To further develop the participatory and democratic management of the Fund, a Local Community Steering Committee (LCSC) was established. It comprises villagers, NGO representatives and community conservation

² Based on the report submitted by Ray Victorine (Conservation Finance Programme – Wildlife Conservation Society) : Maximising Conservation Benefits : Grant Programmes and Sustainable Financing. Symposium on Sustainable Financing for Protected Area and other Environmental Programmes, Madagascar, 15-18 May 2001.

³ The Trust Deed is a legal document which transfers the ownership of a sum of money or other property from the donor to the trustee, in order for the trustee to administer it for specific purpose or individuals. The Deed of Trust usually specifies the exact purpose for which the money can be used, the way in which it can be invested, the specific responsibilities of the trustees, and what will happen to the money if the purpose for which the Fund was established becomes impossible to achieve.

officers. Members serve for a two years term. The responsibility of the LCSC is to review and approve all community projects, subject to final technical review and Board approval for projects above US\$ 1,000, but more rigorous technical review is required for construction infrastructure projects.

During the first round of projects received by the Trust, more than 90% represented infrastructure projects perceived as essential by local communities, like schools, roads, bridges, clinics. The non-community members of the Board urged the communities to submit projects with a more direct link to resource conservation and economic development! A long, fruitful and democratic discussion took place on the best way to manage the parks and the surrounding area. Finally the Board agreed that the communities' vision of the long-term management of the parks had to be taken into account and it approved most of the projects. The communities, in turn, confirmed their commitment to sound management of the parks. A strong relationship of trust and confidence was established between the environmental managers and the communities. Recent research reveals growing local support for the Parks and the gorillas.(Hamilton,2000)

The conclusion is that, without anybody noticing it, the Trust Fund helped to implement the Biodiversity Convention, the Ramsar Convention, the Climate Change Convention and maybe several others. It also helped foster democracy and peace in a region characterised by intense conflicts. Finally, it fosters poverty alleviation.

Today, the link between environment and development is recognised and taken into account in the establishment of all new Trust Funds, including in the naming of the Funds. In its June 1998 proposal for a "Haitien Fund for Environment and Development", the NGO The Nature Conservancy recognises "that while most environmental funds are bio-diversity conservation oriented, the challenge in Haiti is clearly to design a Fund which incorporates a significant component on income generation through sustained use of natural resources"⁴

Conservation International and WWF-Bioregion Sahul are currently providing technical assistance for the establishment of a "Papua Conservation Fund" in Indonesia. Papua is without doubt another biodiversity hotspot on Earth. But like many others, it is increasingly threatened by continuing large-scale conversion of natural forests, and by disregard for the environmental impacts of logging, mining, oil palm plantations and trans-migrant farming. There is a very urgent need for a better implementation of the CBD, Ramsar Convention, Climate Change Convention etc.

Hopefully, today, the potential for better environmental conservation has improved. With the support of the two above-mentioned NGOs, the Indonesian national and provincial governments and local NGOs are beginning to make real progress towards articulating a sustainable development framework that integrates biological priorities with social and economic imperatives. But, according the findings of several workshops, the main limitation to this progress is the lack of sustainable funding to implement conservation activities.

Because of their knowledge, vision and motivation to conserve biodiversity in Papua, the involvement of local communities and NGOs has been very important. Unfortunately, their capacity and ability to raise financial support cannot yet sustain the implementation of long-term conservation activities.

During a series of workshops involving all national, provincial, local and international stakeholders, the idea of creating a conservation Trust Fund has been adopted. The workshops set the objective of creating a multi-billion rupiah trust fund for the conservation of Papua's unique biological heritage. The participants were of the opinion that "if this heritage is sustainably managed, it can be a source of economic and spiritual well being for present and future generations"⁵.

The objective of the proposed Fund is to support community-based organisations, NGOs and research institutions in the following type of activity:

1. Natural resources and conservation management.
2. Empowerment of community organisations and strengthening of NGOs.
3. Scaling-up the quality of conservation activities and the conservation movement in the province, in general.

⁴ Report from R. Curtis, D. Marte, R. Norith. Designing a "Fond Haitien pour l'Environnement et le Developpement", Issues and Options, June 1998. The Nature Conservancy.

⁵ CI folder : "Papua Conservation Fund" . undated.

4. Empowering local institutions such as traditional and tribal institutions.
5. Increase conservation awareness among corporations active in the forestry sector.
6. Strengthening community-based enterprises and economic development consistent with long-term conservation.

In short, implement the CBD, Ramsar Convention, Climate Change Convention, etc...
The governance structure will of course be transparent, democratic and participatory.

The Mexican Nature Conservation Fund (MNCF) is yet another good example. It was created in 1996 and initially capitalised on an endowment basis with a USAID grant of US\$ 30 million another US\$ 10 million from the Government of Mexico and US\$ 16.5 million from the GEF earmarked for use in 10 strategic natural protected areas.

The MNCF main goals are to help conserve ecosystems in biodiversity hotspots; reverse environmental degradation by promoting sustainable productive processes in collaboration with local communities and prepare society in general to protect biodiversity.

Until 1999, the Fund supported 285 projects in the following field:

1. Ecosystem and species conservation	129 projects
2. Sustainable use	31 projects
3. Institutional strengthening	46 projects
4. Identification of conservation needs	12 projects
5. Scholarship	37 projects
6. Various	30 projects
Total	285 projects

In Suriname, 1.6 million hectares of the Central Suriname Nature Reserve is being well managed through an initial endowment of US\$ 1 million raised through private funds by Conservation International. This adds to the US\$ 15 million of the local Suriname Conservation Trust capitalised through a GEF US\$ 9.54 million grant and another US\$ 5 million from the UNDP and the United Nations Foundation (UNF). The Fund allows the Foundation to manage protected areas equalling 163.000 square kilometres.

A GEF evaluation of existing Trust Funds

The Global Environmental Facility (GEF) conducted a review of Environmental Funds in 1998 (GEF, 1999a). Some of their findings regarding the performance of EFs are reproduced below:

- new national parks have been created or existing protected areas expanded or upgraded as a result of EF support
- EFs have generated substantial financial resources that would not otherwise have been available for nature conservation
- Environmental Funds have helped devolve responsibility and decision-making about environmental priorities and programmes to the local level.
- A broad array of stakeholders has often been involved in the creation of Environmental Funds. Increasing participation of civil society in environmental issues.
- Important scientific work has been carried out through EFs, including inventories, zoning and mapping, that will help measure changes in biodiversity.
- Some Funds are having an upstream impact on broader environmental policies.

Environmental Funds are more than financial mechanisms

Environmental Funds have proved to be much more than mere financial mechanisms. They are ever more becoming environmental management institutions, some times complex institutions. This is both good and bad. Good because it promotes a greater awareness of the need to effectively conserve nature and promote sustainable development in a

participatory way, involving the civil society and public institutions. This is bad because it could also become an obstacle if these institutions become too demanding in terms of administrative and technical capacities and costs. According to the GEF report (GEF, 1999a), the Funds that have done best are those that have done much more than just financial management but also played a role in building institutional capacity and private-public partnership, developing agile and non-bureaucratic management approaches, nurturing community groups becoming involved in environmental management, and contributing to the articulation of environmental priorities and strategies. This is exactly what Multilateral Environment Agreements should promote!

The GEF report concludes that while EFs have attracted highly qualified board members, directors and other staff, they still require capacity-building assistance to develop fully and meet their potential as institutions. Governing Boards work much better when their members serve in their individual capacities rather than as formal representatives of a constituency or sector.

The GEF (GEF 1999a and 1999b) also identified conditions for the successful establishment and operations of Environmental Funds. The first four conditions in the following list are *sine qua non* conditions for the success of a Fund.

Important factors for establishing an Environmental Fund

- The environmental issue to be addressed is significant, and appropriate actions to respond are long term and can be met with the resource flows an EF could produce.
- There is active and broad-based government support for creating a mixed, public-private sector mechanism that will function beyond direct government control.
- There is a critical mass of people from diverse sectors – government, NGOs, academic and private sectors, donor agencies – who can work together despite different approaches to nature conservation and sustainable development.
- There is a basic fabric of legal and financial practices and supporting institutions (including banking, auditing and contracting) in which the majority of people have confidence.
- There is a legal framework that permits establishing the Fund, and tax laws that allow it to be exempt from taxes.
- There are mechanisms to involve a broad set of stakeholders in the design process, and willingness by these stakeholders to use them.
- One or more mentors (e.g., another more experienced fund or an experienced international NGO) are available to provide technical support to the new Fund.
- There are realistic prospects for attracting a level of capital sufficient for the Fund to support a significant programme while keeping operating costs to a reasonable percentage.
- There is an effective demand for the fund's products, i.e. a client community interested in and capable of carrying out environmental activities on the scale envisaged.

If one of the first four conditions is missing, it is suggested to investigate other possible financial mechanisms. Some of the other conditions might not be met but if so, efforts should be made to remedy the situation as soon as possible.

Conditions for an efficient operation of an Environmental Fund

Establishing a Environmental Fund is one thing. Effective operation of this Fund is another thing and, according to the GEF review of existing EFs, requires specific conditions:

- Clear and measurable goals and objectives, and a results-oriented management culture that learns from experience and is open to changes in approach based on feedback.
- A governance structure with appropriate checks and balances, conflict of interest provisions, and succession procedures.
- Members of governing bodies who are prepared to commit their time, engage in Fund policy-making and leadership, and build support with varied constituencies.

- Linkages between the Fund and any national environmental strategy or action plan.
- An ability to attract dedicated competent staff, especially a strong executive director. Basic technical and other capabilities that permit the Fund to become a respected and independent actor in the community. Access to and effective use of training, mentoring, and technical assistance resources to build capacity.
- Harmonious and productive board-staff relationship.
- Constructive relationship with relevant government agencies, intermediary organisations that provide services to clients, and other organisations in the environment community. The Fund should avoid becoming an executing agency itself.
- Financial and administrative discipline, combined with programme flexibility and transparency, and procedures that support this and are consistently applied.
- Mechanisms for continuing to involve a wide range of stakeholders in the Fund's programmes and direction, tempered with enough strategic direction and leadership to avoid programme fragmentation.
- Asset management competitively selected, a diversified portfolio of investments, financial expertise to provide regular reporting, and oversight by Fund boards comparing actual performance to benchmarks.

How to capitalise the Fund

As mentioned earlier, money to capitalise EFs is often sought from bilateral or multilateral donor organisations. This is fine and justified by the common but differentiate responsibility principle but, of course, one should not exclusively rely upon “donors”. Mobilisation of domestic financial resources as a way to increase local autonomy and local responsibility should be sought.

Two local fund raising options will be briefly mentioned below: Market Based Instruments and Debt-for-Sustainable Development Swaps.

A. Domestic fundraising through local Market Based Instruments (MBI) might be a good start.

MBIs are a (relatively) new generation of environmental management instruments which appeared in the United States and Europe during the seventies. Initially, they generated harsh concerns and much controversy amongst many. Traditional environmentalists were concerned that the economic arena was invading the environmental field. Traditional economists were concerned about the idea of valuing common goods like air, water and even immaterial goods like landscape, etc.

Since then, a slow but continuous evolution has taken place. The number of applications for MBI has increased as well as the type of instruments. The first one to appear was the simple user charges (on water) and subsidies. Today, there is a full range of instruments well conceived and adapted to modern realities.

In most countries, the primary function is still to raise funds for public budgets. This is good and bad – bad if the funds raised are applied to finance activities which are not related to environmental conservation or pollution control. In this way, it would act as a perfect perverse incentive for fundraising institutions: the more pollution there is, the more they can raise funds for whatever departments!

It is potentially very good if the funds are used to sustain the huge financial requirements to implement more traditional environmental management tools like Command and Control Instruments (CCI). One of the weaknesses of the CCI is that it costs a lot of money but does not raise any. MBI are ideal to supplement CCIs in that sense.

If funds raised through MBIs are used for institutional strengthening activities, training activities, monitoring improvements, etc., the logic becomes: the more pollution there is, the more we have funds to control it efficiently.

Funds raised by MBI could also be used to subsidize good environmental initiatives and Environmental Trust Funds. But they should not be seen as mere fundraising instruments. An additional value of MBIs is that they have the potential to induce behavioral changes and motivate industrialists to go further than legal minimum environmental anti-pollution requirements.

In huge countries like Brazil, India, China or any other, where there is an enormous heterogeneity of environmental but also cultural, social and economic situations, flexible environmental economic instruments can much more easily accommodate this heterogeneity and diversity than rigid environmental and standardised control and command instruments.

Economic instruments also have a role to play in promoting sustainable development and therefore also the objectives of many Multilateral Environment Agreements (UNEP, 1997). They help internalise environmental costs and promote full-cost pricing policies which is the starting point of any sustainable development. Another role is using the Funds raised to invest in socio-economic projects, recuperation of depleted areas, training, reforestation of watersheds, soil Conservation, or to capitalise Environmental Funds.

Of course, MBIs have to be well regulated if they are to be efficient. Doing this is not easy and requires a lot of well-qualified human resources like lawyers, economists and environmental economic valuation specialists to be put in place. They would be useless without a good set of regulations and an efficient legal system. But once they are in place, MBIs are supposed to be more-or-less self-enforced.

Providing it does not add much to their work and responsibilities without bringing any financial benefit, municipalities could become key actors in this effort and lead the process of creating site specific Trust Funds.

Typology and definition of most common Market Based Instruments (OECD, 1998)

- **Emission charges:** direct payment based on the measurement or estimation of the quality and quantity of a pollutant.
- **User charges:** payment for the cost of collective services. For example, charges for the collection and treatment of solid waste, charges on sewage water, charges on hazardous waste, charges on aircraft noise, charges on air pollution, etc. (pollution control). When they are used for natural resources management, they are usually called user fees. For example, for access to national parks, to hunting or fishing facilities.
- **Product charges:** applied to products that create pollution either through their manufacture, consumption or disposal (fertilisers, batteries, pesticides). The aim of this charge is to put a real price on the product to include its collection, disposal and treatment.
- **Taxes** for natural resources management are payment for their use. They are also sometimes called Royalties.
- **Marketable (tradable, transferable) permits, rights, quotas:** also called emission trading. Are based on the principle that any increase in emission or in the use of natural resources must be offset by a decrease of an equivalent, or sometimes greater, quantity. Two broad types of tradable permits system are actually in operation: those based on emission reduction credits (ERCs) and those based on *ex ante* allocations (“cap-and-trade”).
 - ERCs take a “business as usual” approach scenario as the starting point and compare this baseline with the actual performance. If the pollution emitter performs better than the anticipated baseline, a “credit” is earned. This credit can be either used by him or sold to another emitter whose emissions are higher than the accepted baseline.
 - The “cap-and-trade” approach sets an overall emission and use limit (the cap) and requires all pollution emitters to acquire a share of this total before they can emit. Shares may be given free of charge by an environmental agency or auctioned. Their owners can either utilize them, save them for later use, or trade them.

- **Deposit-refund system:** payment made when purchasing a product. The payment (deposit) is fully or partially reimbursed when the product is returned to the dealer or a specialised treatment facility.
- **Non-compliance fee:** imposed under civil law for polluters who do not comply with environmental or natural resources management requirements and regulations. They can be proportional to selected variables such as damage caused by non-compliance, profits linked to reduced non-compliance cost, etc.
- **Performance bonds:** used to guarantee compliance with environmental or natural resources requirements; polluters or users may be required to pay a deposit in the form of a bond. The bond is refunded when the compliance is achieved.
- **Liability payments:** payment made under civil law to compensate for the damage caused by a polluting activity. Such payments can be made to victims or to the government. They can operate in the context of specific liability rules and compensation schemes, or compensation funds financed by contributions from potential polluters (Funds for oil spills, Funds for chemical pollution).
- **Subsidies:** all form of explicit financial assistance to polluters or users of natural resources, e.g. grants, soft loans, tax breaks, accelerated depreciation, etc. for environmental protection.

This list is of course not exhaustive. Specific instruments that respond to the very diverse needs of local realities (deforestation, fires, over-fishing, and hunting) could be created.

The Protected Area Conservation Trust (PACT) of Belize has pioneered an initiative in that it is financed by a US\$ 3.75 tax levied since 1995 on international tourists arriving by air or sea. This tax generates some US\$ 500.000 per year and is directed towards conservation in and around the protected area. Each year, 5% of revenue is set aside to build an endowment. In addition, 20% of all site entry fees, recreational licences and permit fees, concession fees and fines “will” be channelled into the Trust.

3. Payment for Environmental Services

Payments for Environmental services are still relatively new and the subject of an abundant literature but, unfortunately, there is still very little practice in the field, especially in Africa. It is therefore time to stop talking and start doing, and learn by doing, taking into considerations local situations.

A key *sine qua non* starting condition for the success of PES projects is political support.

There are several definitions of what PES are or could be, some of these definitions are strongly drawing on pure liberal economic principles (strongly demand and supply oriented) and other are drawing on social welfare economics (demand-supply but regulated to take into account poverty concerns).

In short, and in simple words, PES is a form of payment (direct or indirect) made to the provider of environmental services (institutions or individuals) for managing the land in a way that benefits others (recipients) through the provision of essential life supporting services (water purification, soils retention, pollinator services, climate change impact mitigation, coastal zones protection, biodiversity conservation etc ...)

Whatever the definition, PES schemes have three major components:

- 1- A clear identification and definition of the services, their beneficiaries and providers at the local, regional and global level.
- 2- A valuation (including an economic valuation) of the services to be traded.
- 3- A marketing scheme for these services.

For UNEP, whatever the definition, there should be no PES projects if they are at the cost of poor people or if they do not take poverty alleviation into account.

Below is a short (not too theoretical) explanation of the economic principles involved. For the sake of clarity and precisely to avoid being too theoretical, this paper will use *wetlands ecosystems* to illustrate the economic principles involved. But of course, the theory applies to all types of ecosystems, especially forests (watersheds), coastal zones, high mountains, coral reefs etc.

Identification of services:

Services are either very local (provision of clean water to a private entrepreneur, provision to local fisherman of a breeding area for fish...), regional (replenishment of aquifers used for the entire region, provision of micro-climate effect to a agricultural region...) or global like the provision of biodiversity services (survival of rhinoceroses or jaguars) to the whole world or provision of climate change mitigation service through sequestration of CO₂.

The services are often divided into 4 categories:

- Watershed services: flood control, erosion and sedimentation control, water quality control, salinization control, maintenance of aquatic habitats, etc ...
- Carbon sequestration by specific ecosystems or through specific land uses (sustainable agriculture etc)
- Landscape beauty (mostly valued in richer countries or by the rich in poor countries)
- Biodiversity conservation (also mostly valued by richer countries or rich people in poor countries)

Economic valuation: Economic valuation can be defined as the attempt to assign quantitative and monetary values to goods and services provided by environmental resources or systems, whether or not market prices are available to assist us. When market prices are not available (e.g., for flood control services, for disaster mitigation services, for erosion avoidance...), the value is established by *the willingness to pay* for the good or service, whether or not we actually make any payment. A major problem in assessing the value of ecosystems arises when the services provided, such as climate change regulation or biodiversity conservation, benefit the global community. This is a complex and still unresolved situation but several pioneer environmentalists are working on possible solutions. The recent discussion at CBD COP in Curitiba (Brazil) will, no doubt, support these pioneers!

Why estimate ecosystem value?

Environmentalists sometimes question the need to always put a price tag on nature and assert that nature has an intrinsic value, that it is our long-term life support system and that this is reason enough to protect it. They are of course totally right but the reality of life on this planet unfortunately shows that many people do not share this view. Especially (but not only) those who suffer from hunger and understandably try to get the most out of wetlands in the short term. If they are hungry today, they will not care about what happens tomorrow - even less in 20 years from now! But people in developing countries do not have the privilege of this short-term approach. People in developed countries often also have restricted vision and prefer to maximize their immediate benefits rather than to secure them for the long term.

This being a realistic view of life on Earth, we have to work with it. We therefore think that when one cannot reasonably expect to change a situation in the short term, it is better to try to make the best of it and exert influence to mitigate its negative effects on the environment.

There are at least two good reasons for evaluating wetland services and goods:

1. In difficult financial times, it is not easy for government decision makers to spend taxpayers' money on environmental activities, especially if there is no broad support from the public. Wetland valuation is a way to estimate ecosystem benefits to people and allows financial experts to carry out a Cost-Benefit activity which might be in favor of environmental investment. Cost-Benefit analysis compares the benefits and costs to society of policies, programmes, or actions to protect or restore an ecosystem. It is therefore an important tool for

environmental managers and decision makers to justify public spending on conservation activities and wetland management⁶.

2. The other good reason is that people are not always aware of the values of wetlands. Many think that they are no more than mosquito breeding areas! By giving objective evidence to skeptical managers and the public of the monetary and non-monetary benefits of wetlands, environmentalists will gain their support. Most people only care about what they love or what brings economic benefit to them. By helping people to improve their living conditions by using and selling wetland goods and services, we will gain strong supporters for our cause!

Economic valuation is but one of many ways to define and measure values. Other types of value (religious, social, cultural, global, intrinsic...) are also important but the economic value is the most important in most countries when decision makers have to make difficult choices about allocation of scarce government resources.

Economic valuation is not an easy and non-conflictive exercise. It often depends on human preferences. In other words, it depends on what people perceive as the (positive or negative) impact wetlands have on their wellbeing. In theory, the economic value of any good or service is measured in terms of what we are willing to pay for the commodity less what it costs to supply it. But often, because they are perceived as common good (market failure), we do not have to pay for wetland products and services. In this case, the value is provided by the estimation of the *willingness to pay*, whether or not we actually make any payment.

The relationship between ecology and economics

Although wetlands are amongst the richest life-supporting ecosystems on Earth, they are amongst the most threatened and destroyed. Why do human beings destroy what are essential elements of their ecosystems? The answer is relatively simple: because they do not value wetland goods and services in economic and monetary terms. Sacred wetlands are an exception and are often well conserved because their religious value is recognized by local people.

The reason why people do not value wetland goods and services is more complex and is probably linked to the fact that most of us are not aware of wetland characteristics (biological, chemical and physical) which enable the development and maintenance of their structure, which in turn is key to the provision of wetland goods and services. Ecosystem functions are the result of interactions amongst characteristics, structure and processes⁷. Because of the complexities of the natural interactions, ecological assessment of these ecosystem functions is best served by a river basin approach. These functions, values and attributes can only be maintained if the ecological processes of wetlands are allowed to continue functioning. But the river basin approach is beyond the extent of direct personal interest of many wetland beneficiaries. An ecological characterization is therefore an indispensable step before carrying out an economic valuation.

In economic valuation exercises, the scale of work is very important in that the attempt to value ecosystems separately, despite the fact that they are highly interdependent, may result in paradoxical results of unwise substitutions of "lesser valued wetland ecosystems" with "higher valued artificial (human made) wetlands".

This is the main reason why the Convention on Wetlands is promoting the river basin scale as the framework for wetland management and is therefore also suggesting using it for wetland economic valuation exercises⁸. Some questions remain about the problem of the exact size of the management unit and many wonder how much of a river watershed should be considered wetland?⁹ In this case, a pragmatic approach would perfectly well complement the theoretical river basin approach!

⁶ Barbier, Acrerman and Knowler, in *Economic Valuation of Wetlands: A Guide for Policy makers and planners*, Ramsar Convention Bureau publication, 1997.

⁷ R.K. Turner et al. In *Ecological Economics* 35 (2000) pp 7-23

⁸ *Integrating Wetland Management and Wise Use into River Basin Management*. Ramsar Handbook N°4, Publication of the Ramsar Convention Bureau.

⁹ Tore Söderqvist and others. In *Valuation of wetlands in a landscape and institutional perspective*. *Ecological Economics* 35 (2000) pp1-6

What are wetland values?

Wetlands, as defined by the Ramsar Convention, cover a wide variety of habitat types, including rivers and lakes, coastal lagoons, mangroves, peat lands, and even coral reefs. In addition, there are human-made wetlands such as fish and shrimp ponds, farm ponds, irrigated agricultural land, salt pans, reservoirs, gravel pits, sewage farms, and canals.

Wetlands are among the world's most productive environments. They are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend for survival. They support high concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species. Of the 20,000 species of fish in the world, more than 40% live in fresh water. Wetlands are also important storehouses of plant genetic material. Rice, for example, which is a common wetland plant, is the staple diet of more than half of humanity.

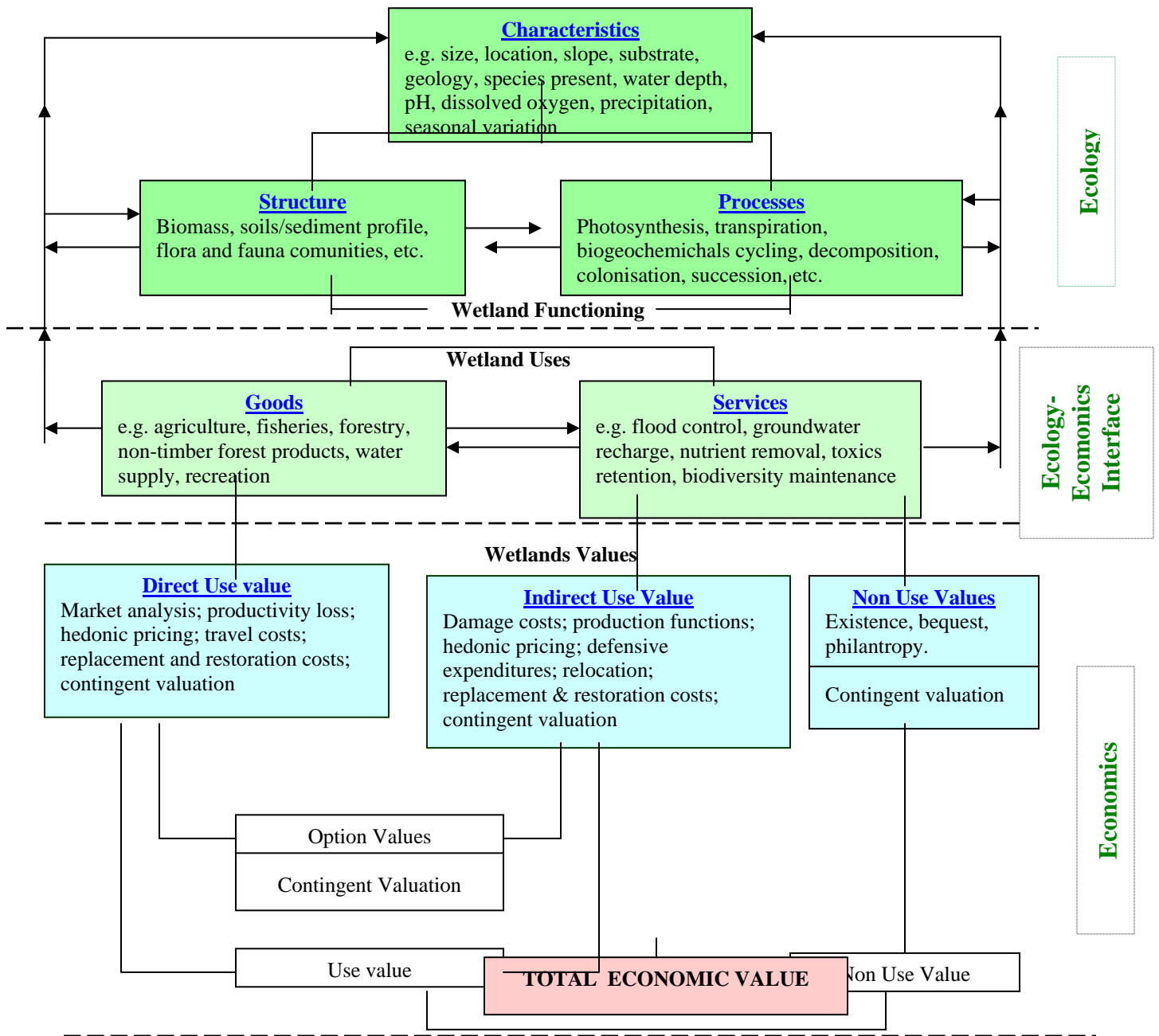
The interactions of physical, biological and chemical components of a wetland, such as soils, water, plants and animals, enable the wetland to perform many vital functions, for example: water storage; storm protection and flood mitigation; shoreline stabilization and erosion control; groundwater recharge (the movement of water from the wetland down into the underground aquifer); groundwater discharge (the movement of water upward to become surface water in a wetland); water purification through retention of nutrients, sediments, and pollutants; and stabilization of local climate conditions, particularly rainfall and temperature.

Wetlands provide tremendous economic benefits, for example: water supply (quantity and quality); fisheries (over two thirds of the world's fish harvest is linked to the health of coastal and inland wetland areas); agriculture, through the maintenance of water tables and nutrient retention in floodplains; timber production; energy resources, such as peat and plant matter; wildlife resources; transport; and recreation and tourism opportunities.

Translating these many values into economic terms is of primary importance if we are to convince of the importance of these ecosystems as life-supporting systems. This is a relatively new science but promising progress is being made.

Figure 1 below taken from R.K. Turner et al., *Ecological Economics* 35 – 2000, p.12, very well summarizes the complex relationship between the different levels of intervention.

Fig. 1 CONNECTIONS AMONG WETLAND FUNCTIONS, USES AND VALUES



Key: ← systems related feedback — Economic/ecological linkages

The total economic value (TEV) of wetlands is defined as the total amount of resources that individuals would be willing to forego for increased amount of wetland services. The TEV is divided into different kinds of components:

A. The Use Values

1. The Direct Use Values (DUV) are the benefits derived from fish, agriculture, fuel wood, recreation, transport, wildlife harvesting, peat/energy, vegetable oils, dyes, fruits, ...
2. The Indirect Use Value (IUV) are the indirect benefits derived from the wetlands functions like nutrient retention, flood control, storm protection, groundwater recharge, external ecosystem support, micro-climatic stabilization, shoreline stabilization, etc.

3. The Option Value (OV) in which an individual derives benefits from ensuring that a resource will be available for future use.

B. The Non-Use values

1. The Non-Use Value (NUV) is derived from the knowledge that a resource (biodiversity, cultural heritage, religious site, and bequest) is maintained. This value is strongly advocated by environmentalists who support the concept of the pure intrinsic value of nature.

How to quantify wetland values?

The next question is how to adequately put a monetary value on wetland products or services. The idea behind the evaluation of wetland products and services is to show that, in some cases, maintaining the natural functions of the ecosystem as untouched as possible can be economically valuable and generate profit. Of course, to adequately do so, one has to compare the price of the wetland product originating from a well preserved wetland with the price of producing similar goods or services in an environmentally less friendly way: building dykes or irrigation schemes, promoting input-intensive agriculture, transforming lands into grazing fields... The key to this exercise is to internalize cost externalities¹⁰. Most of the products and services produced on Earth are subsidized, frequently without the consumer's knowledge. The fact that the fruit producer using chemical fertilizers does not have to pay the cost of water treatment needed to take out the excess of nitrates caused by his use of fertilizers to provide clean drinking water does not reflect the real price of the product. The fact that the farmer who intensively irrigates his field does not have to pay for the damage (erosion, pollution) caused by the running of the water he is using on watershed slopes and finally increasing river water turbidity does not reflect the real price of the cubic meter of water he is using. In these cases, both chemical fertilizers and water are being heavily subsidized. This kind of subsidy leads to little consideration being given to environmental protection. And of course, someone has to pay for the damage caused. Who pays? The whole community, as taxpayers, pays for unwise use of common goods by private individuals.

Because decision makers and politicians want to see convincing figures before they make decisions that might affect their popularity, a series of methods have been developed to try to quantify the monetary values of wetland services and goods.

The easiest way to do this would be to apply the market price method (the law of supply and demand) but this is unfortunately not always possible because for some wetland products and services there is simply no market or because some wetland values are intrinsically non-marketable. These market failures occur when markets do not reflect the full social cost or benefit of a good. Market failures related to ecosystems include the fact that many wetlands (1) provide services that are public goods, (2) many wetlands services are affected by externalities and (3) property rights related to ecosystems and their services are often not clearly defined.

Another limitation of the market price method is that it does not always and automatically reflect the real value of a good. There are many cases where the actual willingness to pay is much higher than what the customer actually pays.

However, several (non perfect) methods have been devised to help quantify or give an order of magnitude for specific wetland values.

The Table below gives an idea of the most common quantitative evaluation methods used, their constraints and limitations.

¹⁰ Internalising simply means including. Cost externalities are all those "external" elements which contribute to the real cost of any item but which, for political reasons or for market failure reasons, are not reflected in the real price and which are therefore paid for by the community. For example, one externality of the cost of fertilisers is the cost of water treatment.

Method	Applicable to...	Description and Importance	Constraints and limitations
Market Price Method	Direct Use values, especially wetland products.	The value is estimated from the price in commercial markets (law of supply and demand)	Market imperfections (subsidies, lack of transparency) and policy distort the market price.
Damage Cost Avoided, Replacement Cost or Substitute Cost Method	Indirect Use Values: coastal protection, avoided erosion, pollution control, water retention...	The value of organic pollutant or any other pollutant's removal can be estimated from the cost of building and running a water treatment plant (substitute cost). The value of flood control can be estimated from the damage if flooding would occur (damage cost avoided).	It is assumed that the cost of avoided damage or substitutes match the original benefit. But many external circumstances may change the value of the original expected benefit and the method may therefore lead to under- or over-estimates. Insurance companies are very interested in this method.
Travel Cost Method	Recreation and Tourism	The recreational value of a site is estimated from the amount of money that people spend on reaching the site.	This method only gives an estimate. Over-estimates are easily made as the site may not be the only reason for traveling to that area. This method also requires a lot of quantitative data.
Hedonic Pricing Method	Some aspects of Indirect Use, Future Use and Non-Use Values	This method is used when wetland values influence the price of marketed goods. Clean air, large surface of water or aesthetic views will increase the price of houses or land.	This method only captures people's <i>willingness to pay</i> for perceived benefits. If people are not aware of the link between the environment attribute and the benefits to themselves, the value will not be reflected in the price. This method is very data intensive.
Contingent Valuation Method	Tourism and Non-Use values	This method asks people directly how much they would be willing to pay for specific environmental services. It is often the only way to estimate the Non-Use values. It is also referred to as a "stated preference method".	There are various sources of possible bias in the interview techniques. There is also controversy over whether people would actually pay the amounts stated in the interviews. It is the most controversial of the non-market valuation methods but is one of the only ways to assign monetary values to non-use values of ecosystems that do not involve market purchases.
Contingent Choice Method	For all wetland goods and services	Estimate values based on asking people to make tradeoffs among sets of ecosystem or environmental services	Does not directly ask for willingness to pay as this is inferred from tradeoffs that include cost attribute. This is a very good method to help decision makers to rank policy options.
Benefit Transfer Method	For ecosystem services in general and recreational uses in particular	Estimates economic values by transferring existing benefit estimates from studies already completed for another location or context.	Often used when it is too expensive to conduct a new full economic valuation for a specific site. Can only be as accurate as the initial study. Extrapolation can only be done for sites with the same gross characteristics.
Productivity Method	For specific wetland goods and services: water, soils, humidity in the air...	Estimates the economic values for wetland products or services that contribute to the production of commercially marketed goods	The methodology is straightforward and data requirements are limited but the method only works for some goods or services.

Adapted from Barbier, E.B., M. Acreman and D. Knowler (1996) *Economic Valuation of Wetlands: A guide for Policy Makers and Planners*. Ramsar Convention on Wetlands; King D. and Mazzota (1999) *Ecosystem valuation website* (www.ecosystemvaluation.org); Struip, M.A.M., Baker, C.J. and Oosterberg, W. 2002. *The Socio-economics of Wetlands*, Wetlands International and Riza, The Netherlands.

Using these methods might seem complicated or very exhaustive for most economic neophytes. But behind the apparent complication there is ample room for the application of common sense.

Economic and financial valuation is not a *panacea*. There are cases where:

(1) It should not be carried out. If the ecosystem we are dealing with is, for example, a Ramsar site with a very rare and highly threatened endemic species and with little potential economic benefit to local people, it is evident that the environmental valuation shall take precedence over any economic valuation. The cost of the loss of endemic species is much higher than the benefit derived from the collection of, say, a few bird eggs for a short period of time before the bird eventually becomes extinct. The same logic can be applied to religious values. In some countries, they are above all economic values.

(2) It should not be done in an exhaustive way. In most countries it will be difficult to find qualified economists to carry out an in-depth economic valuation exercise but some of the methods proposed above can be used by non-economists. Sometimes, the economic benefits are so important to so many people that a rapid economic assessment would be enough to allow decision makers to take decisions. Protecting a rich coastal ecosystem in which a large number of fisherman make a living against the destruction of mangroves for the construction of a road might not require an extensive evaluation.

A partial or rapid economic valuation might be enough to show trends or give an overview of the situation and be a valuable input to the decision-making process. Of course if decision makers do not care about their people, there is nothing an evaluation or the absence of an evaluation can do!

Cost-Benefit Analysis: a tool for decision makers

The section above explained how to answer the question: What does this product cost or what are the monetary benefits of a particular wetland service or good?

Once we have the answer to this basic question, we have to compare the value of a product or service coming from a well preserved and managed wetland with the value of a product coming from a poorly or unwisely managed wetland. This exercise must be done between comparable products or services and of course only makes sense if all externalities are internalized in all costs.

Decision makers cannot take decisions based on intuition alone. They need facts and values but they are also confronted with three very different kinds of input to feed the decision-making process:

1. Environmentalists, NGOs and other interest groups (farmers, tourism industries...) often voice their views strongly and try to influence decision makers. They are supposed to represent the diversity of public views and opinions but they do not always do so in a coherent way! As the basic constituency of decision makers, they are more or less influential.

2. Scientists provide decision makers with supposedly neutral scientific information and facts about the hydrological cycle, the ecosystem functioning etc. Their views are key for decision makers to understand the context in which they work and help them avoid making seriously damaging or irreparable decisions regarding ecosystems management.

3. Environmental economists combine the feelings of environmentalists about the intrinsic value of nature (sentimental approach), the understanding of ecosystem functioning as explained by scientists (scientific approach) and the pragmatism that decision makers need to do their job (real life approach). They provide objective benefit estimations and values.

Marketing Schemes: once you know the price of what you want to sell, one should create a scheme (a market) to actually sell the service or product. Here again, especially in developing countries, the role of public authorities (often a big buyer) will be essential.

Public authorities shall help create the institutional setting and legal framework for these markets to function efficiently. They can also develop relevant policies to promote payments through the conversion of perverse incentives (for deforestation, over use of water etc...) into positive incentives (in other words, payments).

Of course, whenever possible, payments should be done strictly through market mechanisms. The beneficiary (for example a brewing company!) would pay the provider (for example a local community taking good care of an important watershed) for providing clean water to the brewing company.

There are several other forms of payment than cash payments: fiscal incentive, public services like school, provision of water, royalties on fees etc ...

4. Debt-for-Sustainable Development Swaps

Debt Swaps, although with a more limited potential than in the past, remain an important element of an overall strategy to improve the implementation of MEAs in Africa

The term 'debt for development' encompasses any financial transaction under which an NGO converts debt or currency claims against a developing country into additional funding for its local programmes. (...)

An NGO can obtain more local currency by converting its foreign currency resources into local currency through a debt-for-development swap rather than a conventional foreign exchange transaction. Because many external debt instruments of developing countries have little chance of being fully repaid, they can be purchased on the secondary market for a price substantially below their face value. The NGO uses its foreign currency resources to purchase such discounted debt and the debtor country agrees to redeem the debt for local currency in an amount exceeding the discounted price the NGO paid for the debt. The NGO agrees to spend the local currency on an approved local development, environmental or social welfare project.

In some cases, the creditor (often a public one) gives away its credit to an NGO who redeems it with local authorities.

Although efforts have been made lately by some creditor countries to alleviate the burden of developing countries' indebtedness, the debt remains a very high impediment to sustainable development for many of them.

In recent years, most bilateral (guaranteed) debts to Heavily Indebted Poor Countries have been cancelled. But there is still an important amount of debt with potential for conversion, including those that have been renegotiated in the Paris Club and the many debts of non HIPC of Africa.

Debt-for-Sustainable Development Swaps will never be the single definitive solution to the problem but its much more extensive use could certainly be part of a more global solution.¹¹

A series of Environmental Funds has been initially capitalised with the proceeds of debt swaps.

¹¹ On the debt swap mechanism, see Kaiser, Yurgen, and Lambert, Alain (1996). *Debt Swaps for Sustainable Development: a practical guide for NGOs*, IUCN, SDCO, Eurodad, 72pp, ISBN 2-8317-0362-X found on the following website :

http://www.biodiversityeconomics.org/applications/library_documents/lib_document.rm?document_id=379

The Bolivian National Environment Fund (FONAMA) was partially capitalised in 1993 with the proceeds of debt swaps with Canada, Mexico, Germany and the Netherlands. The “Fondo de Las Americas”, the national environment fund of Chile was initially capitalised in 1994 through two debt swaps with the US Government which amounted to about US\$ 18 million over a period of 8 years. The Colombian ECOFONDO was also capitalised in 1992 with the proceeds of a debt swap with the government of Canada (US\$ 12 million) and from the government of the United States under the Entrepise for the Americas iniative (US\$ 41 million). Several other funds, mostly in Latin America, were capitalised with the proceeds of debt swaps : The “ Fondo Integrado Pro Naturaleza (PRONATURA) of the Dominican Republic ; the Environment Fund of El Salvador (FONAES) ; the Guatemalan Trust Fund for Environmental Conservation ; the Environment Foundation of Jamaica ; The Jamaica National Park Trust Fund ; Peru’s Protected Area Fund PROFONANPE ; The Foundation for the Philippine Environment (FPE) ; the ECOFUND Foundation of Poland ; among others.

5. Carbon Offset projects (CDM)

The purpose of this chapter is not to explain in details the steps to make a Carbon offset project but rather to remind the reader of the importance of this potentially good mechanism for Africa.

A scientific consensus has emerged over the last decade that climate change - caused primarily by human activities such as carbon dioxide (CO₂) emissions resulting from the burning of fossil fuels and deforestation - is underway and will have significant impacts on society. Governments, corporations, environmental organizations, and consumers are now responding. Most reductions in greenhouse gases (GHGs) such as CO₂ will need to be realized through energy-related measures such as energy efficiency improvements and investments in renewable energy technologies. However, an alternative and cost effective means of achieving GHG reductions looks to forests as carbon "sinks" that *absorb* atmospheric CO₂ through photosynthesis.

As forests sequester (i.e. store) carbon, forestry projects can mitigate or offset a portion of CO₂ emissions from the burning of fossil fuels or other CO₂-emitting activities. Moreover, an estimated 20-25% of total GHG emissions result from *deforestation*, when carbon stored in plants and soils is released into the atmosphere as a result of burning or decomposition. Therefore, an important strategy for addressing climate change involves *restoration* of forests and the *protection* of forests that are under threat.

Many conservation projects around the world have already raised funds to promote project activities that will have a positive impact on climate change via forests' ability to offset carbon emissions. But some conservation projects might generate extra funds by offering climate change benefits. This short introduction will not go into the details of, and how to begin the process of measuring, marketing, and selling those benefits.

As a response to climate change, governments have been developing an international regulatory framework to mitigate global warming. In 1997 they signed the Kyoto Protocol. The Protocol sets mandatory caps (limits) on the GHG emissions of industrialized countries and "transitional" (mainly ex-communist) economies. While each country has its own specific targets, the total aggregated reductions equal a 5.2 percent reduction from 1990 levels by the so-called first "commitment period" (2008-2012), -the period by which countries must be in compliance. To achieve this target, industrialized signatory country governments will set emissions limits for GHG emitting *companies*.

In addition to setting emission limits, the Kyoto Protocol provides several market-based mechanisms to enable GHG emitters to achieve their assigned reductions. The basic idea, trading emission rights, has been successfully implemented for other pollutants in many countries. Under this system, because some countries will be able to reduce emissions more easily and cheaply than other countries (for example through forest-based carbon offset projects), they can sell their surplus reductions (or carbon credits) to countries that emit more than their limit. This will enable achieving the overall *global* emissions target at the least cost.

Carbon projects can therefore generate financing for conservation by selling certified carbon credits to GHG emitters. The outcome of international agreements such as the Kyoto Protocol and various national regimes will determine the range and magnitude of opportunities for funding for carbon offset projects.

Carbon projects can be developed in the energy and the land-use, land-use change and forestry (LULUCF) sectors. However, we will focus on the most potentially rewarding sector for Africa: considering only projects in the

LULUCF sector, and in particular, forestry-based projects. Such projects often have multiple other benefits such as biodiversity protection, soil conservation, watershed maintenance, and sustainable forest management.

However, it is important to keep in mind that, given the current level of policy and carbon market development, not all conservation projects will make good carbon projects). Nor are all carbon projects good for biodiversity. For example, restoring native vegetation can actually result in a loss of carbon storage because exotic vegetation that may store more carbon has to be removed. In many cases conservation projects will result in little to no net impact on CO₂ emissions. Therefore, only a limited number of conservation projects are likely to be attractive as carbon offset fund-raisers. It will be important to balance maximizing carbon benefits with fulfilling commitment to biodiversity conservation.

Some companies and countries are already investing in carbon offset projects with a view to gaining experience while generating offsets, achieving collateral benefits such as conservation of biodiversity and community development, and gaining greater access to ongoing policy discussions.

African countries can invest in carbon offset projects through the Clean Development Mechanism (CDM) (Article 12 in the KP) which allows industrialized countries to accrue credits ("certified emission reduction units") in return for financing carbon reduction projects in developing countries that help further their sustainable development. The first baseline and monitoring methodologies were approved for CDM in July 2003. For details see: <http://unfccc.int/press/prel2003/pressrel280703.pdf>

The Kyoto Protocol has established various standards that projects must achieve in order for their carbon credits to be considered valid. To have carbon credits certified or accredited under the international regime, carbon projects will need to meet the following standards:

Additionality: Projects must demonstrate that their carbon benefits are additional to any that would otherwise occur" without project investments, and "additional to any that would occur in the absence of the certified project activity". In other words, if a project area is already being re-forested without carbon-related investments, it is not eligible to receive carbon credits for that reforestation.

Quantification: Carbon credits must be real and measurable. In order to measure the carbon credits produced by the project, the project must develop a baseline (that projects what would have happened *without* project activities). The baseline is the standard by which to measure verifiable changes in carbon stocks.

Permanence: Projects must assure the long-term provision of carbon benefits to the buyer of the carbon credits..

Leakage: Project activities must demonstrate that their carbon benefits are not being displaced to other locations through what is called "leakage." For example, if the project is designed to retire a logging concession, project design should help account for the possibility of the concessionaire shifting operations to another location. In the international negotiations this matter is still under discussion and the scientific community was requested to provide scientific solutions to address this issue.

Monitoring and verification: projects will need to develop monitoring plans to ensure that the carbon credits claimed remain the same throughout the lifetime of the project or that change be claimed. Furthermore, projects will need a third party to verify that the carbon credits claimed are measurable, real and additional.